

### **REMARKS**

In response to the Office Action sent June 17, 2005, Applicant respectfully requests reconsideration. Claims 1, 3, 5, 14, 16-18, 23, 26, 29 and 36-40 were previously pending in this application. By this amendment, claims 1, 14, 16, 18, 37 and 39 are amended. Claims 17, 36 and 38 are canceled. Claims 41 and 42 are new. As a result, claims 1, 3, 5, 14, 16, 18, 23, 26, 29, 37 and 39-42 are pending for examination with claims 1, 14, and 18 being independent claims. No new matter has been added.

Applicant appreciates the Examiner's telephone message received on August 9, 2005, which included a discussion of the Examiner's recommendation for amending the claims to distinguish over the art of record. The substance of the telephone message is summarized below.

#### **I. Rejections Under 35 U.S.C. §102**

##### **A. Claim 1**

The Office Action rejects claim 1 under 35 U.S.C. 102(e) as purportedly being anticipated by U.S. Patent No. 6,088,385 (Liu) and as purportedly being anticipated by U.S. Patent No. 5,889,856 (O'Toole). The Examiner indicated in his telephone message that the current rejections could be overcome if claim 1 were amended to include the subject matter of claim 36. While Applicant believes that claim 1, as previously presented, patentably distinguishes over Liu, O'Toole and any alleged combination thereof, Applicant has amended claim 1 to include the subject matter of claim 36 to further the prosecution of this application. Applicant reserves the right to add claims of similar scope in this or related application(s), and to specifically address the patentability of such claims, if deemed necessary. Accordingly, as indicated by the Examiner, claim 1, as amended, is believed to patentably distinguish over Liu and O'Toole and is believed to be in allowable condition.

Claims 3, 5 and 37 depend from claim 1 and are patentable for at least the same reasons.

#### **II. Rejections Under 35 U.S.C. §103**

The Office Action rejects claims 14, 18, 16, 17, 23, 26, 29, 38 and 39 under 35 U.S.C. 103(a) as purportedly being unpatentable over O'Toole in view of Liu. Applicant does not concede that the combination of Liu and O'toole is proper, and reserves the right to argue against the combination in the future, if deemed necessary. While Applicant believes that claims 14 and

18, as previously presented, patentably distinguish over any alleged combination of Liu and O'toole, Applicant has amended claims 14 and 18 to more clearly recite the distinctions based, at least in part, on the Examiner's recommendations.

A. Claim 14

The Examiner indicated that the rejection of claim 14 could be overcome if claim 14 was amended such that each of the first sample-rate converter and the second sample-rate converter are described as having a sample rate capable of being varied during operation of the device in response to a control signal. The Examiner indicated that support for the amended claim can be found on page 32.

While Applicant agrees with the Examiner that the above amendment distinguishes over the prior art and is supported by the specification, Applicant believes that only one of the sample-rate converters need recite a capability of providing a variable sample rate in order to distinguish over the alleged combination of Liu and O'Toole. Applicant respectfully points out that in some embodiments described in the specification, only one of the sample rate converters provides a variable sample rate. In particular, FIG. 17 and the accompanying description on pages 29 and 30 illustrate one embodiment of a device where a single sample rate converter provides a signal with a sample rate that may be varied in response to a control signal.

Accordingly, claim 14 has been amended to recite, "a first sample-rate converter that converts a sample rate of a first digital signal associated with a first protocol of the plurality of signal protocols to provide a first converted digital signal, the first sample rate converter converting the sample rate of the first digital signal by an amount that is capable of being varied during operation of the device according to a control signal received by the first sample-rate converter."

Neither O'Toole nor Liu discloses or suggests a sample-rate converter that converts a sample rate of a digital signal during operation according to a control signal. As the Office Action concedes, O'Toole does not disclose or suggest a first and a second sample-rate converter to provide respective digital signals to form a combined digital signal, which is then converted to a single analog signal by a digital to analog converter. However, the Office Action asserts that "Liu discloses an xdsl modem transceiver with variable sampling rates." Applicant respectfully disagrees. In particular, Liu discloses a device for handling different *data rates* not for providing variable *sampling rates*.

Liu discloses an ADSL transceiver that is scalable by being able to handle full bandwidth ADSL communication and reduced data rate configurations for devices that may not have, for example, powerful on-board digital signal processing capabilities to achieve wide bandwidth capability (col. 4, line 61 – col. 5, line 51). However, varying the effective data rate of a communications system is not the same as varying the sample rate. The data rate refers to the amount of information communicated per unit of time (e.g., bits per second), while the sample rate refers to the number of samples taken of an information stream per unit of time. Liu is completely silent with respect to varying a sample rate or converting a sample rate by a varying amount. The only disclosure in Liu related to sampling rates appears at column 6, lines 17-22:

The full bandwidth signal is bandpass limited to a frequency width B by suitable, well-known techniques as it passes through bandpass Filter and Analog/Digital Converter 280. The received DMT signal is sampled (using any of a number of well-known techniques) and buffered in Buffer 270, which, in a preferred embodiment, is a FIFO.

Liu describes a conventional A/D conversion and mentions nothing about any subsequent sample rate converter. Accordingly, Liu not only fails to disclose a first sample rate converter and a second sample rate converter, but also fails to disclose any sample rate converter that converts a digital signal by an amount that varies. While Applicant believes claim 14, as previously presented, patentably distinguishes over any alleged combination of O'Toole and Liu, Applicant has amended the claim to incorporate, into the first sample rate converter, subject matter that the Examiner indicated distinguishes over the art of record.

Claim 14, as amended, recites a device that processes signals to be provided over a communication link in support of a plurality of signal protocols, the device comprising a first sample-rate converter that converts a sample rate of a first digital signal associated with a first protocol of the plurality of signal protocols to provide a first converted digital signal, the first sample rate converter converting the sample rate of the first digital signal by an amount that is capable of being varied during operation of the device according to at least one control signal received by the first sample-rate converter, a second sample-rate converter that converts a sample rate of a second digital signal associated with a second protocol of the plurality of signal protocols to provide a second converted digital signal, and a digital to analog converter configured to receive a combined digital signal formed from the first converted digital signal and

the second converted digital signal and to convert the combined digital signal to a single analog signal associated with both the first protocol and the second protocol.

Nowhere does the combination of Liu and O'Toole disclose or suggest a first sample-rate converted that converts a sample rate of a first digital signal by "converting the sample rate of the first digital signal by an amount that is capable of being varied during operation of the device according to at least one control signal received by the first sample-rate converter," as recited in claim 14. Therefore, claim 14 patentably distinguishes over the combination and is in allowable condition.

Claim 16 depends from claim 14 and is allowable for at least the same reasons.

B. Claim 18

In the phone message, the Examiner indicated that the rejection of claim 18 could be overcome by amending claim 18 such that each of the first decimation filter and second decimation filter recited the capability of providing converting the sample rate of the digital signal by an amount that varies during operation of the device according to a control signal. As with claim 14, Applicant agrees that such an amendment distinguishes over the art of record. However, Applicant believes that a single decimation filter that provides a variable sample rate conversion distinguishes over the combination of Liu and O'Toole. While Applicant believes claim 18, as previously presented, distinguishes over the alleged combination of Liu and O'Toole, Applicant has amended claim 18 to incorporate subject matter the Examiner indicated as distinguishing over the art of record.

As discussed above, Liu describes a device that performs a reduction of the data rate of the device, and is completely silent with respect to providing a sample rate conversion that can be varied during operation. Claim 18, as amended, recites a device that receives and processes signals from a communication link and supports a plurality of signal protocols, comprising an analog to digital (A/D) converter, coupled to the communication link, that receives an analog input signal indicative of a signal on the communication link and outputs a digital signal representative of the analog input signal, the digital signal having components associated with the plurality of signal protocols and a digital filter, coupled to the A/D converter, the digital filter comprising a first decimation filter that receives the digital signal and converts a sample rate of the digital signal by an amount that varies during the operation of the device according to at least one control signal received by the first decimation filter to provide a first sample-rate converted

digital signal having a first sample rate, the first sample-rate converted digital signal associated with a first of the plurality of protocols, and a second decimation filter that receives the digital signal and converts the sample rate of the digital signal to provide a second sample-rate converted digital signal having a second sample rate, the second sample-rate converted digital signal associated with a second of the plurality of protocols.

Nowhere does the combination of Liu and O'Toole disclose or suggest a first decimation filter that converts a sample rate of a digital signal "by an amount that varies during the operation of the device according to at least one control signal received by the first decimation filter," as recited in claim 18. Therefore, claim 18 patentably distinguishes over the combination and is in allowable condition.

Claims 25, 26, 29 and 39-42 depend from claim 18 and are allowable for at least the same reasons.

**CONCLUSION**

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

A request for an extension of time, and a check for the associated fee, are submitted herewith. If any additional fee is occasioned by this response, and is not covered by the enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,  
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